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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/664,923	09/22/2003	Noboru Miura	117166	5151

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OLIFF & BERRIDGE, PLC
P.O. BOX 19928
ALEXANDRIA, VA 22320

EXAMINER

KOSLOW, CAROL M

ART UNIT PAPER NUMBER

1755

DATE MAILED: 10/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/664,923

Applicant(s)

MIURA ET AL.

Examiner

C. Melissa Koslow

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-7 is/are rejected.
- 7) ☒ Claim(s) 2 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 June 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 6/22/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference characters not mentioned in the description: reference numbers 42 and 43 in figure 1 and reference number 10 in figure 2. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim 5 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.

Paragraphs [0016] and [0039] teach the matrix material satisfied the equation $0.001 < z/(z+w) < 0.6$. Claim 5 teaches the matrix material satisfied the equation $0.001 < w/(z+w) < 0.6$. The discrepancy between the claimed numerator and that disclosed in the specification needs to be corrected.

Claim 7 is rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for producing a phosphor thin film having the formula $A_xB_yO_wS_z$ and a

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luminescent center, where A is at least one of Mg, Ca, Sr, Ba and Zn, B is at least rare earth element (which includes Sc and Y), $0 < x < 5$, $0 < y < 4$, $0 \leq w < 8$, $0 \leq z < 8$ and $0 \neq z \neq w$ by a vapor deposition method using a single vapor source including an oxide or sulfide of a rare earth metal, a substance acting as a luminescent center and at least one alkaline earth element and then annealing the resulting thin film, does not reasonably provide enablement for producing a phosphor thin film by a vapor deposition method using a single vapor source including an oxide or sulfide of a rare earth metal, a substance acting as a luminescent center and at least one alkaline earth element and then annealing the resulting thin film. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims.

The claims recite producing a phosphor thin film by a vapor deposition method using a single vapor source including an oxide or sulfide of a rare earth metal, a substance acting as a luminescent center and at least one alkaline earth element and then annealing the resulting thin film. This encompasses any phosphor comprising an alkaline earth, a luminescent center, a rare earth metal and at least one of oxygen and sulfur, such as alkaline earth aluminates containing more than one rare earth element, since rare earth elements act as luminescent centers. However, the specification only teaches the production of thin films of phosphors having the formula $A_xB_yO_wS_z$ and a luminescent center, where A is at least one of Mg, Ca, Sr, Ba and Zn, B is at least rare earth element (which includes Sc and Y), $0 < x < 5$, $0 < y < 4$, $0 \leq w < 8$, $0 \leq z < 8$ and $0 \neq z \neq w$. Such a limited disclosure does not support the breadth of the instant claims. The examiner suggests the incorporation of the formula into claim 7 to overcome the rejection.

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Claim 1-5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "thin film", claimed as such, is indefinite and misdescriptive when the coated material is not included. *Ex parte Scott* 66 USPQ 371 (PO BdPatApp 1945). Thin films cannot exist without a support. Applicants can either claim a thin film on a support or a thin film composition.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3 and 6 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by JP 02-51891 or JP 02-148688.

The abstracts for these references teach a EL panel comprising a thin film comprising a phosphor having the formula $\text{CaM}_x\text{S:Eu}$, where M is Ce, Pr or Tm and x is greater than 0. The abstract for JP 02-148688 teaches M is Ce and x is 10^{-7} to 0.001 and the example in JP 02-51891 teaches M is Ce and the value of x is 0.0001-0.001. The that formulas fall within the claimed formula. The reference teaches the claimed thin film and EL panel.

Claims 1 and 3 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. patent 6,042,746.

This patent teaches a phosphor layer in field emission displays (col. 6, lines 24-25), which are known in the art to be thin films, where the phosphor has an europium luminescent

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center (col. 3, lines 35-37) and a matrix having the formula ZnM_2S_4 , where M is La, Y, Sc or Lu (col. 3, lines 52-55). The reference teaches the claimed thin film.

Claims 1, 3 and 4 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. patent 6,252,254.

This reference teaches a film of $SrY_2S_4:Eu$ and $CaLa_2S_4:Ce$ on a LED (col. 3, line 45-48 and col. 4, line 30). The taught thickness of the film is such that some of the blue light emitted by the LED to penetrate the film, which implies the film is a thin film. The reference suggests the claimed film.

Claim 2 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 5 and 7 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112 set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

There is no teaching or suggestion in the cited art of record of the claimed process for producing a phosphor with the formula $A_xB_yO_wS_z$ and a luminescent center, where A is at least one of Mg, Ca, Sr, Ba and Zn, B is at least rare earth element (which includes Sc and Y), $0 < x < 5$, $0 < y < 4$, $0 \leq w < 8$, $0 \leq z < 8$ and $0 \neq z \neq w$ and where there is a single vapor source including an oxide or sulfide of a rare earth metal, a substance acting as a luminescent center and at least one alkaline earth element to form a phosphor thin film. There is no teaching or suggestion in the cited art of record of a phosphor thin film having the formulas of claims 2 or 5.

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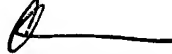
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melissa Koslow whose telephone number is (571) 272-1371. The examiner can normally be reached on Monday-Friday from 8:00 AM to 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Bell, can be reached at (571) 272-1362.

The fax number for all official communications is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

cmk
October 27, 2004


C. Melissa Koslow
Primary Examiner
Tech. Center 1700